REMARKS

In the Office Action mailed November 16, 2007 claims 1-14 and 16-19 are currently pending. Claims 1-14 and 16-19 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Jordan et al. (US Patent No. 6,438,652) in view of Zisapel et al. (US Patent No. 6,665,702) in view of "Applicants Admitted Prior Art (AAPA)" and in view of Primak et al. (US Publication No. 2001/0039585).

Applicants respectively traverse. After a careful review of the Office Action, Applicants' claim clarifications, and the cited references, Applicants respectively request reconsideration in view of the following remarks.

I. CLAIM REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 1-14 and 16-19 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Jordan et al. (US Patent No. 6,438,652) in view of Zisapel et al. (US Patent No. 6,665,702) in view of Applicants Admitted Prior Art (AAPA) and in view of Primak et al. (US Publication No. 2001/0039585). Applicants respectively traverse.

A. Applicant's Presently Claimed Invention

This present invention relates to load balancing. More specifically, it relates to using a proxy server to provide load balancing. (Applicant's Specification at p. 2, lines 4-7).

As Applicants previously explained, the system and method of the present invention advantageously provides a system for load balancing. Specifically, a control node may be provided that balances the traffic load sent to proxies in a network. The control node may maintain information that assigns the traffic load to the proxies.

In one example of the present invention, a control node is coupled to a plurality of proxies. The control node may receive information from the plurality of proxies, maintain a list

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of all proxies, and assigns a weight to each of the proxies in the list, the weight based in part upon information received from the proxies. The control node may receive information from the plurality of proxies, maintain a list of all proxies, and assigns a weight to each of the proxies in the list, the weight based upon information received from the proxies. The control node may receive a request and use the weights to assign a proxy. The request may then be forwarded to the selected proxy by the control node. (Applicant's Specification at p. 3, lines 4-13).

Applicants provide Figure 1 which is a diagram illustrating a preferred embodiment of the system for load balancing in accordance with the present invention. As Applicants describe and referring to Figure 1, a system includes a user agent 102, a first proxy 104, a redirect server 106, a network 108, a control node 110 (including a user agent profile database 111), a location server 112, a second proxy 114, third proxy 116, fourth proxy 118, a network 120, and a user agent 122.

The user agent 102 is coupled to the proxy 104. The proxy 104 is coupled to the network 108 and the redirect server 106. The network 108 is coupled to the control node 110. The control node 110 is coupled to the proxies 114, 116, 118, and the location server 112. The proxies 114, 116, and 118 are coupled to the network 120. The network 120 is coupled to the user agent 122.

The functions of the user agents 102 and 122 may be implemented by computer instructions stored in memory and executed by a processor. A user agent (caller) may transmit messages to another agent (callee). The messages may be of any type or format.

The functions of the proxies 104, 114, 116, and 118 may be implemented using computer instructions stored in a memory and executed by a processor. The proxies 104, 114, 116, and 118 may be stateless or stateful. Also, the proxies 104, 114, 116, and 118 may stay in the path of

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a call for the duration of a session or may be out of the path. In addition, the proxies may implement SIP or any other type of protocol.

Any of the proxies 104, 114, 116, or 118 may route messages to other proxies or other devices. A downstream proxy (e.g., proxies 114, 116, or 118) may receive messages from other proxies (e.g., upstream proxies) or other devices (e.g., the SIPCN).

The functions of the redirect server 106 may be implemented using computer instructions stored in a memory and executed by a processor. The redirect server 106 includes information needed to route calls from the caller to the callee across the network 108.

The networks 108 and 120 may be any type of network used to transmit any type of information. In one example, the networks 108 and 120 may be IP networks, which transmit packets of information. Other types of networks are possible.

The functions of the control node 110 may be implemented using computer instructions stored in a memory and executed by a processor. A list of all downstream proxies is kept on the control node. Each of the proxies may be weighted using the information available to the control node 110. Once the weighting is performed, messages may be assigned to proxies based upon the weighted values.

Weighting may be done by any number of methods. For example, weighting may be done by tracking the traffic load of the proxies; by determining the load on the proxies by tracking the delay in the responses of the proxies; or by monitoring the load on the proxies by querying specific processes of the proxies. Other types of weighting algorithms may also be used. (Applicant's Specification at p. 5, line 3 – p. 6, line 19).

In order to provide further flexibility in the network, pre-weighting may also be used. Pre-weighting allows the SIPCN to ensure that the SPs with lower processor capability are not

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overloaded. In other words, loads are distributed equitably rather than equally. The pre-weight may be manually configured by a network administrator, or may be determined dynamically via processes running on the hosts. In one example, process status utilities such as ps, pstat, pmon, pulist and pslist may be used. Pre-weighting may be implemented as a field in the SIPCN table. The field may indicate the handicap of each SP and contribute to the weighted value of the host. This would provide the benefit of allowing a variety of unequal processor hosts to be used within the same cluster, as SPs. (Applicant's Specification at p. 12, lines 3 – 12).

As Applicants also explain, the Voice over Internet Protocol (VoIP) is a technique where voice information is packetized and transmitted over a network. VoIP uses signaling to establish, modify, and terminate multimedia events. For example, the Session Initiation Protocol (SIP) and H.323 represent two methods whereby signaling may be provided. SIP is an application-layer call control protocol for VoIP and other media applications. (Applicants' Specification at p.2 lines 6 – 13).

The presently pending independent claims are generally directed to such methods and systems for load balancing using Voice over Internet Protocol (VoIP) information received from proxies. Such proxies implement the SIP protocol. For example, independent claim 1 expressly recites a method of load balancing comprising the step of "receiving at a control node, Voice over Internet Protocol (VoIP) information from a plurality of downstream proxies the VoIP information including a delay time between the control node and the downstream proxies" and that "the proxies implement the SIP protocol." Independent claim 1 has also now been clarified and further amended to expressly recite the step of "assigning a weight to each of the downstream proxies in the list, the weight based in part upon the <u>VoIP</u> information including the delay time received from the downstream proxies and also <u>in part on a pre-weighting of at least</u>

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one of the downstream proxies in the list." (emphasis added). The remaining independent claims contain similar limitations.

B. The Cited References Do Not Teach or Suggest Applicants' Presently Claimed Invention

Jordan 652 fails to teach, either expressly or inherently, such a "method of load balancing in an upstream proxy" by assigning a weight to each proxy based "in part on a pre-weighting of at least one of the downstream proxies in the list." For example, Jordan '652 appears to teach a load monitor for each cache server 150. According to Jordan '652, Figs. 2a-2b provide examples of data formats of two tables maintained by the load monitor. As depicted, the tables include a load table 102, and a caching table. (Jordan '652, Col. 6 lines 6-10).

The present Office Action states that Jordan 652 discloses the step of "assigning a weight to each of the downstream proxies in the list, the weight based upon information received from the downstream proxies" relying in part on Jordan 652 Col. 6, lines 6-25. Applicants respectively disagree.

Jordan 652 does not teach or suggest the limitation expressly recited in claim 1: assigning a weight based in part on VoIP information including a delay time. However, in an effort to expedite the allowance of the presently pending claims, Applicants have further modified the presently pending claims to further distinguish Jordan 652. As mentioned above, Applicants have revised the presently pending claims to further recite the step of assigning a weight based in part "upon the VoIP information including the delay time received from the downstream proxies and also in part on a pre-weighting of at least one of the downstream proxies in the list."

Jordan 652 at Col. 6, lines 6 – 25 fails to teach such a step. Jordan 652 teaches a load table that includes the load condition of each cache server 150 so that overloaded and under loaded servers can be identified. Jordan 652 also explains that "conventional" techniques may

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be used to identify an overloaded cache server and describes such conventional techniques: *i.e.*, "the load monitor can compute the mean load of all proxy cache servers in past intervals. Overloaded cache servers can be those with loads exceeding a threshold above the mean load." Jordan 652 Col. 6, Lines 17-20. Consequently, Jordan '652 does not teach or suggest using VoIP information for load balancing by assigning a weight "<u>in part on a pre-weighting of at least one of the downstream proxies in the list</u>." As Applicants explain, in order to provide further flexibility in Applicants' network, pre-weighting may also be used. Pre-weighting allows the Control Node to ensure that the Proxies with lower processor capability are not overloaded. In other words, loads are distributed equitably rather than equally. The pre-weight may be manually configured by a network administrator, or may be determined dynamically via processes running on the hosts. Jordan 652 does not teach or suggest such a "pre-weighting step." The other "art" cited in the presently pending Office Action also does not teach or suggest such a pre-weighting step.

For example, Zisapel 702 appears to teach "load balancing requests among redundant network servers in different geographical locations." (Zisapel 702, Col. 1, lines 11-14). Zisapel '702 does not teach the use of VoIP information, let alone using VoIP information or messages from a plurality of downstream proxies while "distributing a traffic load to one of the plurality of downstream proxies based in part on the weight of each of the downstream proxies" and then "monitoring the load on the proxies by querying specific processes of the proxies."

The other cited references fare no better. For example, the present Office Action states that "[i]n analogous art, AAPA discloses that proxy servers can implement the SIP protocol (i.e. "arrays of SIP proxy servers") (p. 2, lines 20-21) and pass VOIP information (i.e. call information) (p 2, lines 7-11, 16-19). Office Action page 4. Applicants respectively traverse.

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At page 2, lines 7-11 and 16-19, Applicants mention that Voice over Internet Protocol (VoIP) is a technique where voice information is packetized and transmitted over a network. Applicants do not discuss or describe that VoIP can be used with proxy servers for load balancing of a plurality of proxies by assigning a weight to each of the downstream proxies.

And at page 2, lines 20-21 Applicants mention that in carrier class networks, arrays of SIP proxy servers may be used for increased call capacity and redundancy. Applicants do not discuss or describe that these SIP proxy servers are used for load balancing of a plurality of proxies by assigning a weight to each of the downstream proxies and do not discuss how such an array of SIP proxy servers could be used for load balancing, let alone load balancing based in part on VoIP data.

And Primak 585 fares no better than any other cited reference. Primak 585 is generally directed to a system and method of directing connections between a client and a server in a distributed client server environment. Primak 585 ¶ [0002]. The present Office Action relies on para [0025] as teaching capacity information (i.e., load) in order to monitor the load on the particular server. However, Primak 585 is not directed to Voice over IP, does not teach the use of VoIP information including a delay time between a control node and a downstream proxy and does not teach the use of assigning a weight base in part on VoIP including a delay time. <u>Primak 585 is instead primarily focused on using Domain Name System (DNS) servers to direct a client's request to a particular server.</u>

II. SUMMARY

The presently pending independent claims 1, 6, 8, 10, 11, 13, 18, and 19 are allowable for at least all of the reasons stated above. The remaining pending claims are all dependent on these

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allowable independent claims and are therefore allowable for at least the reasons stated above.

Applicants respectfully submit that, in view of the remarks above, the present application is in condition for allowance and solicit action to that end.

If there are any matters that may be resolved or clarified through a telephone interview, the Examiner is respectfully requested to contact Applicants' undersigned representative at (312) 913-0001.

Respectfully submitted,
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